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PATENT ABSTRACTS OF JAPAN

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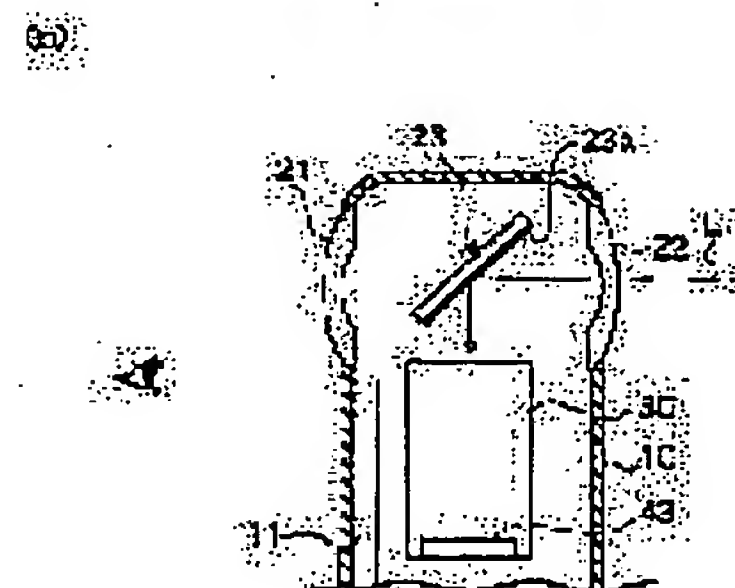
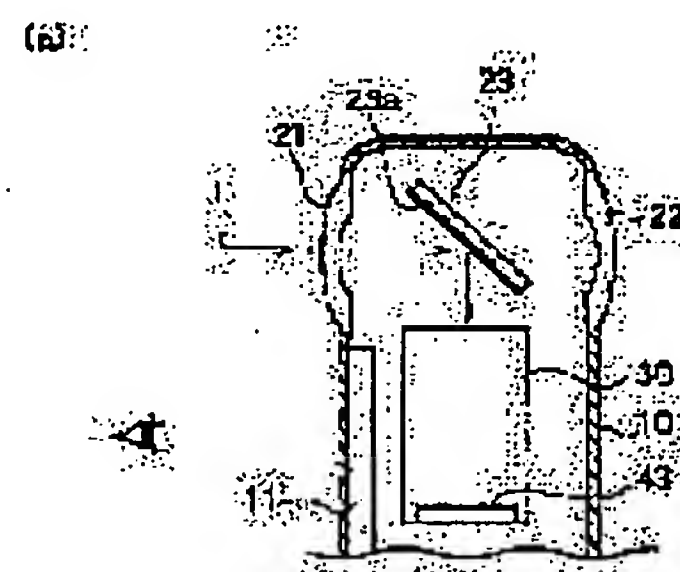
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(54) PORTABLE INFORMATION TERMINAL

(57)Abstract:

PROBLEM TO BE SOLVED: To enable a photographed picture to be confirmed on a display part while attaining the miniaturizing and the simplifying of a portable information terminal in the portable telephone set or the like provided with a photographing camera.

SOLUTION: In the portable information terminal provided with a display part 11 capable of displaying information, a camera part 20 which includes an optical unit 30 and a photographing device 43 and a housing 10, a photographing direction is made to be able to be changed over to the front side and the back side of the terminal by providing respectively a first lens 21 and a second lens 22 at the front side and the back side of the housing 10 and by providing a reflecting mirror 23 to be freely rotatable between these lenses and by changing over the direction of the reflecting mirror 23. As a result, even when an object to be photographed existing at either of sides of the front side or the back side of the housing 10 is photographed, the photographed picture can be confirmed on the display part 11. Moreover, the optical unit 30 and the photographing device 43 or the like can be arranged in the inside of the housing 10 by adopting the reflecting mirror and they can be prevented from being collided with external parts and are prevented



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from being damaged or the like.

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CLAIMS [Claim(s)]

[Claim 1] A portable information terminal comprising:

- a display which can display information;
- a camera section comprising an optical unit and an image sensor for photographing a photographic subject, and
- a case holding said display and the camera section, and wherein said optical unit has a reflective mirror which can switch the optical axis of photographic subject light to change shooting direction.

[Claim 2] The portable information terminal according to claim 1, wherein said case has a 1st light transmission object which is arranged on the same side front as the side by which said display has been arranged to pass photographic subject light, and

a 2nd light transmission object arranged on the background which counters, which has said 1st light transmission object, and is characterized by what said reflective mirror is arranged for free [rotation] between said 1st light transmission objects and said 2nd light transmission objects.

[Claim 3] The portable information terminal according to claim 2, wherein said 1st light transmission object and the 2nd light transmission object is made of a lens, and the reflective mirror is arranged next to said lens along the traveling direction of light from a photographic subject.

[Claim 4] The portable information terminal according to claim 2 or 3, which further comprises a control unit for manually changing the direction of said reflective mirror at the exterior of said case.

[Claim 5] The portable information terminal according to claim 2 or 3, which further comprises a driving means for automatically changing direction of said reflective mirror at the interior of said case.

[Claim 6] The portable information terminal according to any one of claim 1 to claim 5,

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wherein said optical unit is variable-power lens optical system which makes the scale factor of a photographic subject adjustable to said image sensor.

[Claim 7] The portable information terminal according to any one of claim 1 to claim 6 which further comprises a controlling means controlled in order to display the photography information obtained by said camera section, and wherein said controlling means can change the display information displayed by said display from a dynamic image to a static image in case the direction of said reflective mirror is changed.

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[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the Portable information terminal equipped with the camera which can photo the scenery of an operator or the circumference etc. especially about Portable information terminal s (hereafter, a portable telephone, a pocket mold personal computer, etc. are named generically, and a Portable information terminal is called), such as a portable telephone or a pocket mold personal computer.

[0002]

[Description of the Prior Art] In recent years, radio communications systems, such as a broadband code division multiple access (W-CDMA), are developed, and Portable information terminal s (PDA), such as a portable telephone which can transmit and receive a picture signal, or a pocket mold personal computer, are developed in connection with a data transfer rate improving according to this communication environment.

[0003] As a camera used in order to transmit a picture signal, the post-installation type or fixed camera (the so-called mobile camera) is known. And the shooting direction of this camera is being fixed to the same side front as the display which displays immobilization, for example, various transceiver information, in the fixed direction to the case of a Portable information terminal , or the reverse background, respectively.

[0004]

[Problem(s) to be Solved by the Invention] By the way, if the camera is being fixed to the background on the other hand, in case the operator itself is photographed, it is difficult [it / it is difficult to check a display, in case scenery etc. is photographed if the camera is being fixed to the side front for example, and], although to take a photograph, checking in a display first when transmitting a photography image in the above-mentioned conventional Portable information terminal is desired to check a display.

[0005] Not to mention becoming complicated structurally, it becomes weak to the impact in the cases, such as fall, to make into pivotable structure the part exposed outside, although carrying out the modularization of the camera, supposing that it is pivotable to a body, and changing the shooting direction of a camera is also considered in order to cope with this, and it becomes easy to cause breakage etc.

[0006] This invention is accomplished in view of the above-mentioned point, and the place made into the purpose can change shooting direction easily, and also structurally it is hard to damage it, attaining miniaturization of equipment, simplification, etc., and is in offering the Portable information terminal excellent in operability.

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[0007]

[Means for Solving the Problem] The Portable information terminal of this invention is a Portable information terminal equipped with the case holding the display which can display information, the camera section containing the optical unit and image sensor for photographing a photographic subject, and a display and the camera section, and the above-mentioned optical unit is characterized by what it has [a thing] a switchable reflective mirror for the optical axis of photographic subject light so that it may change shooting direction . According to this configuration, photography of not only an one direction but the other directions can be performed by changing the sense of a reflective mirror. Moreover, by adopting the reflective mirror which can change shooting direction in this way, an optical unit, an image sensor, etc. can be arranged inside a case, the collision with the exterior, breakage, etc. can be prevented, the dependability on a function increases, and convenience improves.

[0008] In the above-mentioned configuration, it has the 1st light transmission object which a case is arranged [object] on the same side front as the side by which the display has been arranged, and passes photographic subject light, and the 1st light transmission object and the 2nd light transmission object arranged on the background which counters, and the configuration arranged free [rotation] between the 1st light transmission object and the 2nd light transmission object can be used for a reflective mirror. That photography image can be checked by the display, photographing the photographic subject on the same side front as a display, when a reflective mirror is turned to the 1st light transmission object according to this configuration, and on the other hand, when a reflective mirror is turned to the 2nd light transmission object, that photography image can be checked by the display, photographing the photographic subject on a background.

[0009] In the above-mentioned configuration, the 1st light transmission object and the 2nd light transmission object consist of a lens, and the configuration arranged by the degree of a lens in the penetration direction of photographic subject light can be used for a reflective mirror. According to this configuration, on the side front and background of a case, the range of the photographic subject photographed can be extended compared with the case where mere transparent flat part material (for example, transparent plastic sheet for covering) is used.

[0010] In the above-mentioned configuration, the configuration which prepared the control unit for changing the sense of a reflective mirror with hand control is employable as the exterior of a case. According to this configuration, in changing the sense of a reflective mirror, miniaturization and simplification can be performed by

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considering as the manual operation by the control unit, raising operability.

[0011] Moreover, in the above-mentioned configuration, the configuration which established the driving means for driving in order to change the sense of a reflective mirror automatically is employable as the interior of a case. Since according to this configuration the driving means of a reflective mirror can be prepared in the interior of a case, smooth-ization on the front face of a case can be performed by this, since it is not manual operation, and a driving means does not collide directly in the cases, such as fall, that breakage etc. can be prevented.

[0012] In the above-mentioned configuration, the configuration which is the variable power lens optical system which makes the scale factor of a photographic subject adjustable to an image sensor can be used for an optical unit. According to this configuration, photography in the range broad from looking-far photography to wide angle photography can be performed only by adjusting an optical unit, without changing photography distance to attain adjustment of a field angle and change photographic coverage, since the optical unit is constituted as optical system in which variable power is possible. Moreover, since variable power adjustment is carried out in the interior of a case, without projecting from a case, fear, such as that collision and breakage, is reduced, this optical unit can carry out [smooth]-izing of the appearance configuration of a case, and its convenience improves by expansion of photographic coverage.

[0013] In the above-mentioned configuration, it has the control means controlled in order to display on a display the photography information photographed by the camera section, and in case the sense of a reflective mirror is changed, the configuration which changes the display information by the display from a dynamic image to a static image can be used for a control means. It can prevent that the interior of a case etc. is photographed and displayed when it is made to display on a display by having used the dynamic image in front of a change as the static image and a change is completed in case [in case the sense of a reflective mirror is changed according to this configuration, for example,] a reflective mirror rotates by displaying a dynamic image. Thereby, shooting direction can be changed, without giving an operator (transmitting person) and an addressee sense of incongruity.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained, referring to an accompanying drawing. The sectional side elevation in which the appearance front view in which Fig. 1 thru/or Fig. 7 show 1 operation gestalt of the Portable information terminal (here portable telephone) concerning this invention, and Fig. 1 shows the outline on a side front, the external view in which Fig. 2 shows a

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background, the sectional view in which Fig. 3 shows a internal structure, the decomposition perspective view in which Fig. 4 shows the structure of the circumference of a reflective mirror and Fig. 5 show an appearance side elevation, and Fig. 6 shows the reflective condition of a reflective mirror, the sectional view in which Fig. 7 shows an optical unit and an image sensor, and Fig. 8 are the block diagrams showing a control system.

[0015] The portable telephone concerning this operation gestalt is equipped with the substrate 50 grade which attaches the control means which is arranged the case 10 which demarcates an outside profile, the display (liquid crystal display monitor) 11 which is prepared in the front face of a case 10 and can display the information about various transmission and reception, the antenna section 12, the various operating buttons 13, the camera section 20 for photographing a photographic subject, and inside a case 10, and performs various signal processing as shown in Fig. 1 thru/or Fig. 3 .

[0016] As shown in Fig. 1 thru/or Fig. 3 , the camera section 20 In the 1st lens 21 as the 1st light transmission object which is arranged on the side front of a case 10 and also makes the role of covering, the 1st lens 21, and the location that counters Between the 2nd lens 22 as the 2nd light transmission object, the 1st lens 21, and the 2nd lens 22 which are arranged on the background of a case 10 and also make the role of covering It is constituted by the variable power lens optical system 30 and the CCD43 grade as an image sensor which make the scale factor of a photographic subject adjustable while Fig. the photographic subject light reflected by the reflective mirror 23 which set and has been arranged for the predetermined include-angle range, enabling free rotation, and the reflective mirror 23.

[0017] Here, the optical unit is constituted by the reflective mirror 23 and variable power lens optical-system 30 grade which were arranged sequentially from the penetration direction of photographic subject light and which have been arranged inside the 1st lens 21 or the 2nd lens 22, and a case 10. Thus, since nothing, the reflective mirror 23 which is a movable object, and the variable power lens optical system 30 are arranged [role / of wrap covering] inside the case 10 in the front face, it can prevent the collision with the exterior of these movable objects, breakage, etc., and the 1st lens 21 and the 2nd lens 22 which were fixed to the case 10 not only let photographic subject light pass, but can raise the dependability on a function.

[0018] The reflective mirror 23 is formed of detection plate 23c formed in the end section of reflector 23a, rotation shaft 23b, and rotation shaft 23b in one, as shown in Fig. 3 thru/or Fig. 5 . And as shown in Fig. 3 , the control unit 60 for rotating the reflective mirror 23 with hand control is combined with the other end of rotation shaft

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23b.

[0019] A control unit 60 has the rotation shaft 61 and a pin 62, as shown in Fig. 4 and Fig. 5, and variant hole 61a which fits in rotation shaft 23b (other end) of the side in which flat part 23b' was formed is formed in the rotation shaft 61. Moreover, as shown in a case 10 at Fig. 4 and Fig. 5, it sets in the side-attachment-wall section. Bearing hole 10a supported for the rotation shaft 61, enabling free rotation, long hole 10b of the shape of radii which can insert in a pin 62 free [migration] in the include-angle range of 90 degrees of abbreviation, As the clip sections 10c and 10d which pinch a pin 62 in the both ends of long hole 10b, and can be held are formed and the interior is shown in Fig. 3, bearing 10e which supports rotation shaft 23b is formed.

[0020] Furthermore, as shown in Fig. 3 and Fig. 4 to detection plate 23c of the reflective mirror 23, sensors 71 and 72 are arranged, and when the reflective mirror 23 (reflector 23a) is in the location which faces to the 1st lens 21, and the location which faces to the 2nd lens 22, sensors 71 and 72 detect the location, respectively. Here, as sensors 71 and 72, a non-contact-type photo interrupter or the sensor of a contact process is employable.

[0021] Therefore, if a control unit 60 rotates to the clockwise rotation in Fig. 5 (b) and a pin 62 is pinched by clip section 10c where a control unit 60 and the reflective mirror 23 are attached, reflector 23a of the reflective mirror 23 will be positioned so that it may face to the 1st lens 21 on a side front, as shown in Fig. 6 (a). Thereby, the 90 degree direction of abbreviation is changed by reflector 23a, and the photographic subject light L which has passed along the 1st lens 21 is led to the variable power lens optical system 30. And it detects that a sensor 71 has the reflective mirror 23 in the location shown in Fig. 6 (a).

[0022] On the other hand, if a control unit 60 rotates to the counterclockwise rotation in Fig. 5 (b) and a pin 62 is pinched by 10d of clip sections, the reflective mirror 23 will be positioned so that it may face to the 2nd lens 22 on a background, as shown in Fig. 6 (b). Thereby, the 90 degree direction of abbreviation is changed by reflector 23a, and the photographic subject light L which has passed along the 2nd lens 22 is led to the variable power lens optical system 30. And it detects that a sensor 72 has the reflective mirror 23 in the location shown in Fig. 6 (b).

[0023] The variable power lens optical system 30 is formed of the 1st lens group 32 and 2nd lens group 33 grade which are guided by three guide shafts 31a (one is un-illustrating) which is fixed within a case 31 and elongated in the direction L of an optical axis, and guide shaft 31a, and move, respectively, as shown in Fig. 7. Moreover, behind the case 31, the CCD43 grade as the crystal filters 41, such as an infrared filter and a low pass filter, a face plate 42, and an image sensor is arranged sequentially from

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the penetration direction of the photographic subject light L. In addition, the 1st lens group 32 and the 2nd lens group 33 perform focus actuation while they are suitably moved in the direction L of an optical axis and make the scale factor of a photographic subject adjustable to CCD43 with a cam member (un-illustrating), a drive motor (refer to Fig. 8), etc.

[0024] Moreover, as a control system, as shown in Fig. 8 The control section 100 which consists of a CPU as a control means which manages various control etc., and information outputted from sensors 71 and 72 are made into a detection signal. The detecting circuit 110 and the variable power lens optical system 30 to process The motor 120 to drive It has the image storage section 160 and the main-switch 170 grade which memorize the image display circuit 150 which performs processing for displaying information on the lens drive circuit 130 to control, the image-processing circuit 140 which processes the picture signal from CCD43, and a display 11, a photography image, etc.

[0025] Next, actuation and actuation of the above-mentioned portable telephone are explained. First, a main switch 170 is set to ON and the display by the display 11 and photography of it by the camera section 20 are attained. In this condition, on the side front of a case 10, as it is made to rotate clockwise and a control unit 60 is shown in Fig. 6 (a), the reflective mirror 23 is positioned in the location which faces to the 1st lens 21 to photo the operator itself by the camera section 20, and display that photography image on a display 11. Then, a sensor 71 detects the location at the same time a pin 62 is pinched and held at clip section 10c. And based on the detection signal, a control signal is emitted by the image display circuit 150 from a control section 100, and the display of dynamic images, such as an operator photographed by the camera section 20, is started by the display 11.

[0026] Then, an operator can check the photography image displayed on the display 11, can operate a transmitting carbon button etc., and can transmit that image to an addressee. In addition, a photograph can be taken in photography by the camera section 20, making a motor 120 drive through the lens drive circuit 130, and performing a zoom and variable power adjustment of wide ** by operating suitably the variable power control unit (un-illustrating) prepared in the exterior of a case 10.

[0027] On the other hand, a control unit 60 is counterclockwise rotated 90 degrees of abbreviation to photo the photographic subject on the background of a case 10 by the camera section 20, and display that photography image on a display 11 from this condition, in order to change the reflective mirror 23 to the location shown in Fig. 6 (b). It detects that the reflective mirror 23 began to rotate a sensor 71 to this rotation

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initiation and coincidence. And based on this detection signal, a control section 100 emits a control signal to the image display circuit 150, stops the display of a dynamic image, and controls a static image just before the image storage section 160 memorized to make it display on a display 11.

[0028] And as shown in Fig. 6 (b), the reflective mirror 23 is positioned in the location which faces to the 2nd lens 22. Then, a sensor 72 detects the location at the same time a pin 62 is pinched and held at 10d of clip sections. And based on the detection signal, the control signal changed to a dynamic image is emitted from a static image from a control section 100 to the image display circuit 150, and the cine mode display of the photographic subject on the background of the case 10 photographed by the camera section 20 is started by the display 11. Here, in the image display circuit 150, desired processing is beforehand performed by the change of the reflective mirror 23, and it is displayed on a display 11 so that the image displayed on a display 11 may not be reversed (it is not displayed on a vertical upside-down like).

[0029] Then, an operator can check the photography image displayed on the display 11, can operate a transmitting carbon button etc., and can transmit that image to an addressee. In addition, a photograph can be taken, making a motor 120 drive through the lens drive circuit 130, and performing a zoom and variable power adjustment of wide ** by operating a variable power control unit (un-illustrating) suitably, in photography by the camera section 20 like the above-mentioned.

[0030] Thus, only by changing the sense of the reflective mirror 23, the photographic subject on a side front and a background can be photographed suitably, and a photography image can be checked by the display, and convenience improves.

Moreover, in the case of the change of the reflective mirror 23, by changing the image displayed on a display 11 to a static image from a dynamic image, it can prevent that an unnecessary dynamic image is displayed and can prevent giving an operator or an addressee sense of incongruity. Furthermore, simplification of structure, low cost-ization, etc. can be performed by considering as the configuration which operates the reflective mirror 23 with hand control.

[0031] Fig. 9 shows other operation gestalten of the Portable information terminal concerning this invention. In addition, about the same configuration as the above-mentioned operation gestalt, the same sign is attached and the explanation is omitted. In the portable telephone concerning this operation gestalt, as shown in Fig. 9, the reflective mirror 23 is arranged so that that rotation shaft 23b may develop in the vertical direction, and the variable power lens optical system 30 is arranged so that the optical axis which carries out incidence may become horizontally (longitudinal

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direction). Moreover, the control unit 60 is arranged free [rotation] at the case 10 bottom.

[0032] Such an arrangement configuration is suitable when the tooth space in the vertical direction has constraint for example, in the case 10 interior, and since it loses the excrescence in the cross direction of a portable telephone and can carry out [smooth]-izing of the lateral surface, in case it takes a portable telephone in and out of a receipt case etc., it can perform the receipts and payments easily.

[0033] Fig. 10 thru/or Fig. 12 show other operation gestalten of the Portable information terminal concerning this invention. In addition, about the same configuration as the above-mentioned operation gestalt, the same sign is attached and the explanation is omitted. In the portable telephone concerning this operation gestalt, as shown in Fig. 10 thru/or Fig. 12, the step motor 80 as a driving means is directly linked with the end section of rotation shaft 23b of the reflective mirror 23. On the other hand, the other end of rotation shaft 23b is inserted in 10f of bearing holes formed in the side-attachment-wall section of a case 10, and is supported free [rotation].

[0034] Moreover, as shown in Fig. 11, the sensor 73 is arranged at the side-attachment-wall section of a case 10. And a sensor 73 detects the location, when the reflective mirror 23 is in the location which faces to the 1st lens 21. In addition, as a sensor 73, the sensor of a contact process, a non-contact-type photo interrupter, etc. are employable. Furthermore, in the side face of a case 10, the circuit changing switch 90 which emits the signal for changing the sense of the reflective mirror 23 is arranged free [reciprocation]. In addition, as a circuit changing switch 90, a push-type [not only a slide type but] push button etc. is sufficient.

[0035] Moreover, as a control system, as shown in Fig. 12 The control section 100 which consists of a CPU as a control means which manages various control etc., and information outputted from a sensor 73 are made into a detection signal. The detecting circuit 110 and the variable power lens optical system 30 to process The motor 120 to drive The lens drive circuit 130 and the picture signal from CCD43 to control To the image-processing circuit 140 and display 11 to process, information Change actuation of the mirror drive circuit 180 and a circuit changing switch 90 which controls the step motor 80 which carries out the rotation drive of the image storage section 160 which memorizes the image display circuit 150 which performs processing for displaying, a photography image, etc., a main switch 170, and the reflective mirror 23 is made into an electrical signal. It has the switching circuit 190 grade to process.

[0036] Next, actuation and actuation of the above-mentioned portable telephone are explained. First, a main switch 170 is set to ON and the display by the display 11 and

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photography of it by the camera section 20 are attained. In this condition, on the side front of a case 10, if a circuit changing switch 90 is moved to an one direction to photo the operator itself by the camera section 20, and display that photography image on a display 11, based on the signal from a switching circuit 190, a control section 100 will emit a control signal in the mirror drive circuit 180, and a step motor 80 will begin to rotate.

[0037] And if a sensor 73 detects the reflective mirror 23 and outputs a signal, based on this output signal, a control signal will be emitted by the mirror drive circuit 180 from a control section 100, and a step motor 80 will stop. Thereby, as shown in Fig. 6 (a), the reflective mirror 23 is positioned in the location which faces to the 1st lens 21. And a control signal is emitted by the image display circuit 150 from a control section 100, and the display of dynamic images, such as an operator photographed by the camera section 20, is started by the display 11.

[0038] Then, an operator can check the photography image displayed on the display 11, can operate a transmitting carbon button etc., and can transmit that image to an addressee. In addition, a photograph can be taken in photography by the camera section 20, making a motor 120 drive through the lens drive circuit 130, and performing a zoom and variable power adjustment of wide ** by operating suitably the variable power control unit (un-illustrating) prepared in the exterior of a case 10.

[0039] On the other hand, a circuit changing switch 90 is moved to hard flow to photo the photographic subject on the background of a case 10 by the camera section 20, and display that photography image on a display 11 from this condition, in order to change the reflective mirror 23 to the location shown in Fig. 6 (b). By this change actuation, based on the signal from a switching circuit 190, a control section 100 emits a control signal in the mirror drive circuit 180, and a step motor 80 begins to rotate.

[0040] Simultaneously, a control section 100 emits a control signal to the image display circuit 150, stops the display of a dynamic image, and controls a static-image image just before the image storage section 160 memorized to make it display on a display 11.

Moreover, while a sensor 73 outputs a signal to rotation initiation and coincidence of a step motor 80, when the drive number of steps of a step motor 80 counts with a counter (un-illustrating) with it as the starting point and it becomes the counted value corresponding to angle of rotation of 90 degrees of abbreviation, a control signal is emitted by the mirror drive circuit 180 from a control section 100, and a step motor 80 stops.

[0041] Thereby, as shown in Fig. 6 (b), the reflective mirror 23 is positioned in the location which faces to the 2nd lens 22. And the control signal changed to a dynamic

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image is emitted from a static image from a control section 100 to the image display circuit 150, and the display of the dynamic image of the photographic subject on the background of the case 10 photographed by the camera section 20 is started by the display 11. Here, in the image display circuit 150, desired processing is beforehand performed by the change of the reflective mirror 23, and it is displayed on a display 11 so that the image displayed on a display 11 may not be reversed (it is not displayed on a vertical upside-down like).

[0042] Then, an operator can check the photography image displayed on the display 11, can operate a transmitting carbon button etc., and can transmit that image to an addressee. In addition, a photograph can be taken, making a motor 120 drive through the lens drive circuit 130, and performing a zoom and variable power adjustment of wide ** by operating a variable power control unit (un-illustrating) suitably, in photography by the camera section 20 like the above-mentioned.

[0043] Thus, only by changing the sense of the reflective mirror 23, the photographic subject on a side front and a background can be photographed suitably, and a photography image can be checked by the display, and convenience improves.

Moreover, in the case of the change of the reflective mirror 23, by changing the image displayed on a display 11 to a static image from a dynamic image, it can prevent that an unnecessary dynamic image is displayed and can prevent giving an operator or an addressee sense of incongruity.

[0044] Furthermore, since the above reflective mirrors 23 and the control unit 60 linked directly become unnecessary by having been made to perform the rotation drive of the reflective mirror 23 with a step motor 80 automatically, as long as there is no constraint on the tooth space in the case 10 interior, it can arrange to the sense of a request of the reflective mirror 23 and the variable power lens optical system 30 of others, such as the vertical direction, not only a horizontal direction, etc. but the direction of slant.

[0045] In the above-mentioned operation gestalt, although the variable power lens optical system 30 in which variable power photography is possible was shown as an optical unit, it is not limited to this and the fixed lens of a single focal type may be adopted. Moreover, in the above-mentioned operation gestalt, as the 1st light transmission object and the 2nd light transmission object, although lenses 21 and 22 were adopted, it is not limited to this and the reflective mirror 23 may be adopted for the flat plastics member which only passes photographic subject light as wrap covering.

[0046] In addition, in the above-mentioned operation gestalt, when not performing photography in the camera section 20, it can be made for OFF actuation of a main switch 170 to be interlocked with, and the reflective mirror 23 (reflector 23a) can be

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rotated to the location used as CCD43 and abbreviation parallel, and the location can also be made into a position of rest. It can prevent that a powerful light advances into the interior of an optical unit, and CCD43 grade is damaged by this in the case of un-using it.

[0047]

[Effect of the Invention] As stated above, according to the Portable information terminal of this invention, in the camera section containing the optical unit and image sensor for photographing a photographic subject, not only an one direction but photography of the other directions can be performed by changing the sense of a reflective mirror by having established the optical axis of photographic subject light for the switchable reflective mirror in order to change shooting direction to a part of optical unit. Especially when a reflective mirror is turned to the 1st light transmission object by arranging the 1st light transmission object and the 2nd light transmission object on the side front and background of a case, and arranging a reflective mirror free [rotation] among both The photography image can be checked by the display, photographing the photographic subject on the same side front as a display, and on the other hand, when a reflective mirror is turned to the 2nd light transmission object, the photography image can be checked by the display, photographing the photographic subject on a background.

[0048] Moreover, by adopting the reflective mirror which can change shooting direction in this way, the body of the camera section can be arranged inside a case, the collision with the exterior, breakage, etc. can be prevented, the dependability on a function increases, and convenience improves.

[0049] Furthermore, by changing the display information by the display from a dynamic image to a static image, in case the sense of a reflective mirror is changed, in case a reflective mirror rotates, it can prevent that the interior of a case etc. is photographed and displayed. Thereby, it can prevent giving an operator (transmitting person) and an addressee sense of incongruity.

DESCRIPTION OF DRAWINGS [Brief Description of the Drawings]

[Fig. 1] It is the front view showing the appearance on the side front of the portable telephone as an example of the Personal Digital Assistant machine concerning this invention.

[Fig. 2] It is the rear view showing the appearance on the background of the portable telephone shown in Fig. 1 .

[Fig. 3] It is the sectional view showing the internal structure of the portable telephone shown in Fig. 1 .

[Fig. 4] It is the decomposition perspective view showing the reflective mirror which

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constitutes some portable telephones shown in Fig. 1 , and its circumference component.

[Fig. 5] The appearance side face of the portable telephone shown in Fig. 1 is shown, and the side elevation in the condition that (a) removed the control unit, and (b) are the side elevations in the condition of having attached the control unit.

[Fig. 6] The internal structure of the portable telephone shown in Fig. 1 is shown, and the sectional side elevation in which (a) shows the condition that the reflective mirror was turned to the 1st lens side on a side front, and (b) are sectional side elevations in which a reflective mirror shows the condition of having been turned to the 2nd lens side on a background.

[Fig. 7] It is the sectional view showing the structure of the camera section which consists of an optical unit, an image sensor, etc.

[Fig. 8] It is the block diagram showing the control system of the portable telephone shown in Fig. 1 .

[Fig. 9] Other operation gestalten of the portable telephone as an example of the Personal Digital Assistant machine concerning this invention are shown, and the front view in which (a) shows the appearance on a side front, and (b) are the sectional views showing a internal structure.

[Fig. 10] The operation gestalt of further others of the portable telephone as an example of the Personal Digital Assistant machine concerning this invention is shown, and the front view in which (a) shows the appearance on a side front, and (b) are the sectional views showing a internal structure.

[Fig. 11] It is the decomposition perspective view showing the reflective mirror which constitutes some portable telephones shown in Fig. 10 , and its circumference component.

[Fig. 12] It is the block diagram showing the control system of the portable telephone shown in Fig. 10 .

[Description of Notations]

10 Case

11 Display

20 Camera Section

21 1st Lens (1st Light Transmission Object)

22 2nd Lens (2nd Light Transmission Object)

23 Reflective Mirror

23a Reflector

23b Rotation shaft

23c Detection plate

18-299Reference1

30 Variable Power Lens Optical System (Optical Unit)

43 CCD (Image Sensor)

60 Control Unit

71, 72, 73 Sensor

80 Step Motor (Driving Means)

90 Circuit Changing Switch

100 Control Section (Control Means)

140 Image-Processing Circuit

150 Image Display Circuit

160 Image Storage Section

180 Mirror Drive Circuit

190 Switching Circuit

[Translation done.]

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